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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL CENTER FOR ENVIRONMENTAL ASSESSMENT
RESEARCH TRIANGLE PARK, NC 27711

July 8, 1999

OFFICE OF
RESEARCH AND DEVELOPMENT

MEMORANDUM

SUBJECT: Current IRIS RfC for methyl ethyl ketone (MEK)

FROM: Gary L. Foureman, Health Scientist
Hazardous Pollutant Assessment Group
National Center for Environmental Assessment - RTP (MD-52)

TO: James White, Environmental Scientist
Office of Air Quality Planning and Standards (MD-13)

This memo is written with regards to your inquiry concerning the RfC that should be considered in your deliberations on the current delisting petition (Section 313) for methyl ethyl ketone (MEK; CAS No. 78-93-3).

An earlier memo on this subject (dated January 9, 1997; attached) reviewed and evaluated a revised value for the RfC proposed by the petitioner. The memo pointed out that revisions to IRIS are undertaken only at the level of the chemical and not the individual assessment such as the RfC. The entire data base of the chemical is evaluated and the assessments developed subjected to internal, external-peer and Agency consensus review. This earlier memo also emphasized that there was no assurance that the outcome of a reevaluation entering this process would be supported by any of these reviews. Since MEK is not among the chemicals proceeding through the IRIS process there is no prospect for current revision of the file. It should be added that discussions such as have occurred with MEK, both internal and external to the Agency, can serve as primary stimuli for future IRIS efforts and that the opportunity for program office input to IRIS is in the near future.

Until there is a policy on revision, this RfC value for MEK is not likely to be reconsidered in the near future. I therefore suggest to you and submit the current IRIS value of 1 mg/m^3 as the official RfC for MEK for use in your delisting deliberations.

Attachment

cc: Les Grant
Karen Hammerstrom
Amy Mills

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MEMORANDUM

DATE: January 9, 1997

SUBJECT: Commentary on Petitioner Proposal to Alter Existing Methyl Ethyl Ketone RfC

FROM: Gary L. Foureman
Health Scientist
Hazardous Pollutant Assessment Group
National Center for Environmental Assessment-RTP (MD-52)

THRU: Lester D. Grant
Director
National Center for Environmental Assessment-RTP

TO: Karen Hammerstrom (8623)
Assistant Center Director for Pesticides and Toxics

I have read the portions in the petition to delist (Section 313) methyl ethyl ketone (MEK) addressing the current RfC. The Petitioner is proposing that the RfC for MEK currently on IRIS be raised by a factor of 3 to reflect EPA's new guidance for deriving RfCs.

The basis of this proposal by the Petitioner is actually a reduction of the MEK uncertainty factor (UF) for interspecies extrapolation from the default value of 10 currently on IRIS, to 3. There are both a policy basis and precedent within the IRIS database for this action. This policy is discussed in *Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry* (EPA/600/8-90/066F, 1994) and has been applied to a number of RfCs recently added to IRIS including allyl chloride, arsine, chlorodifluoromethane, ethyl benzene, and ethyl chloride. The latter 2 RfCs are parallel to methyl ethyl ketone RfC as the critical effect, developmental toxicity, for these compounds and MEK is the same. A reduction in the interspecies UF is warranted upon incorporation of dosimetric adjustments and is consistent with EPA practices. In calculating a human equivalent concentration (HEC), as was done with MEK by the Petitioner, a dosimetric adjustment is made. The reduction in the UF is typically 3 ($\approx 10^{½}$). This action would raise the RfC by this factor as the assessment is based on the NOAEL/UF approach.

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Although there exist both a policy basis and precedent for reducing the interspecies extrapolation UF for MEK, IRIS files are not typically altered piecemeal. More typically, the entire IRIS file undergoes review, including reconsideration of ALL areas of uncertainty. The outcome of such a review with regards to uncertainty factors and a final RfC value cannot be predicted in this memo. Current efforts for IRIS are devoted to chemicals of the Pilot Process and MEK does not happen to be among the most current group. However, ongoing delisting processes are grounds for future chemical candidacy.

Terminology and arithmetic are also problems here. The current and official IRIS RfC for MEK is 1 mg/m^3. The revised value of 3 mg/m^3 would not be official as it is not the value on IRIS. I would propose that the revised value be referred to as "proposed, revised RfC" to indicate the actual status of the value. Too, EPA practice on IRIS chemicals has been to consider partial UFs of 3 to be actually $10^{½}$. Thus, the total "proposed, revised UF" would be 1000, not 900 as the Petitioner has indicated and the resultant "proposed, revised RfC" would be 3 mg/m^3, not 3.3 mg/m^3 as indicated by the Petitioner.